

**UNITED STATES DISTRICT COURT  
DISTRICT OF MASSACHUSETTS**

SINGULAR COMPUTING LLC,

Plaintiff,

v.

GOOGLE LLC,

Defendant.

Civil Action No. 1:19-cv-12551-FDS

Hon. F. Dennis Saylor IV

**MEMORANDUM OF LAW IN SUPPORT OF  
PLAINTIFF'S MOTION TO COMPEL PRODUCTION OF  
SAMPLES OF THE ACCUSED PRODUCTS**

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ATTORNEYS FOR THE PLAINTIFF



Plaintiff, Singular Computing LLC (“Singular”), respectfully submits this Memorandum of Law in support of its motion to compel the production of samples of the accused TPUv2 and v3 processing boards. Defendant, Google LLC (“Google”), has refused Singular’s numerous requests for such production. For the reasons set forth below, the motion should be granted.

## **I. INTRODUCTION**

There should be no need for Singular to file this motion. The Amended Complaint and the infringement contentions specifically allege that the accused infringing products are Google’s Tensor Processing Units (“TPU”) v2 and v3. As alleged in the Amended Complaint, these devices willfully infringe the patents-in-suit:

21. Prior to the launch of the accused TPUv2 Device and Cloud Tensor Processing Unit Version 3 (TPUv3 Device), Google knew or should have known that the accused devices infringed the ’273 and ’156 patents or was willfully blind to such infringement.

22. Following disclosure to Google by Dr. Bates of his invention, Google copied and adopted Dr. Bates’ patented invention, incorporating such into the accused TPUv2 and TPUv3 Devices and more generally into its data centers. This is apparent from a comparison of Dr. Bates’ patented architecture and that of the accused TPUv2 and TPUv3 Devices. It is also apparent from an exemplary comparison of the disclosures made in writing by Dr. Bates to Google from 2010-2014 with the properties and features that Google later adopted in its TPUv2 and TPUv3 Devices in 2017-2018.

Dkt. No. 37, ¶¶ 21.22.

The Amended Complaint also specifically identifies the two infringing boards:



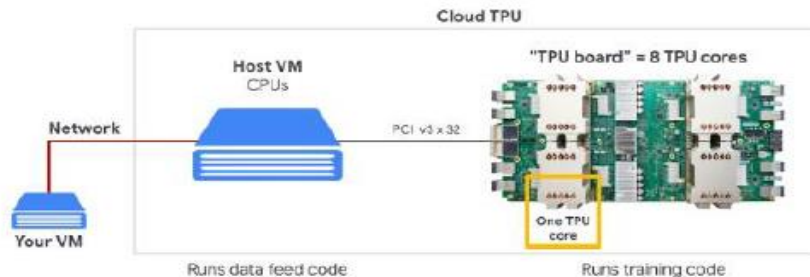
89. A TPUv2 and a TPUv3 Device are examples of a “*device*,” as claimed by the ’273 patent. As published by Google:

#### TPU versions

Each TPU version defines the specific hardware characteristics of a TPU device. The TPU version defines the architecture for each TPU core, the amount of high-bandwidth memory (HBM) for each TPU core, the interconnects between the cores on each TPU device, and the networking interfaces available for inter-device communication.

#### Cloud TPU

When you request one “[Cloud TPU v2](#)” on Google Cloud Platform, you get a virtual machine (VM) which has a PCI-attached TPU board. The TPU board has four dual-core TPU chips. Each TPU core features a VPU (Vector Processing Unit) and a 128x128 MXU (MatriX multiply Unit). This “Cloud TPU” is then usually connected through the network to the VM that requested it. So the full picture looks like this:

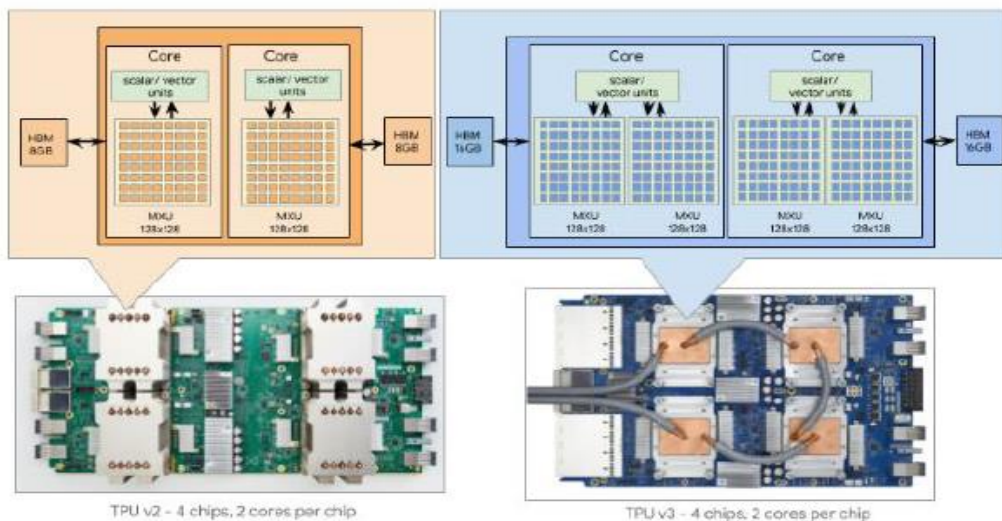


90. Each TPUv2 and TPUv3 Device infringes claim 53 of the ’273 patent, by *inter alia*, including over 100,000 matrix multiplication unit (MXU) arithmetic logic units (ALUs) and associated circuitry.



- a. Each TPUv2 Device has 8 MXUs (one MXU per TPU core, 2 TPU cores per chip, and 4 chips per TPUv2 Device), and each TPUv3 Device has 16 MXUs (two MXUs per TPU core, 2 TPU cores per chip, and 4 chips per TPUv3 Device). As published by Google:

- TPU v2:
  - 8 GiB of HBM for each TPU core
  - One MXU for each TPU core
  - Up to 512 total TPU cores and 4 TiB of total memory in a TPU Pod
- TPU v3:
  - 16 GiB of HBM for each TPU core
  - Two MXUs for each TPU core
  - Up to 2048 total TPU cores and 32 TiB of total memory in a TPU Pod



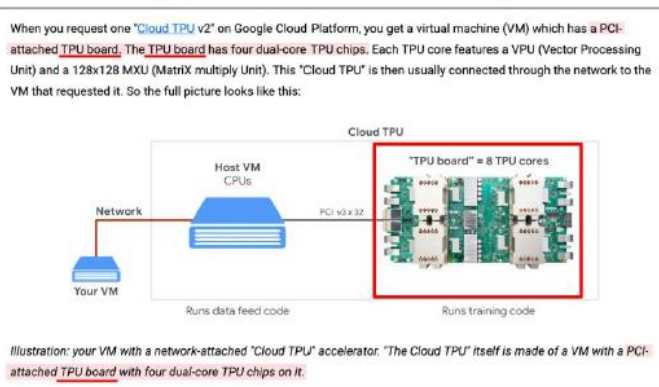
*Id.* at ¶¶ 89, 90.

In addition, as stated in Singular's infringement contentions, the TPUv2 and TPUv3 boards infringe the patents in suit.

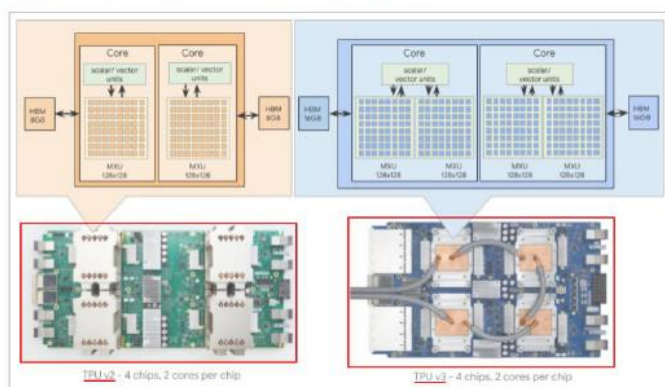


### INFRINGEMENT EVIDENCE

As demonstrated below, the Accused Products include multiple components that, separately and independently, meet all the requirements of the claimed “device.” For example, a “TPU Board” satisfies these requirements:



<https://codelabs.developers.google.com/codelabs/keras-flowers-convnets/#2>



<https://cloud.google.com/tpu/docs/system-architecture>

Declaration of Kevin Gannon (“Gannon Dec.”), Ex. A. Thus, there can be no legitimate dispute that the TPUv2 and v3 boards are relevant to Singular’s infringement claims and Singular has specifically identified the devices the production of which it has requested. There can also be no dispute that Google has failed to comply with Local Patent Rule 16.6(2)(B)(4), pursuant to which Google was required to automatically produce “sufficient samples of the accused products” by October 23, 2020.

It is not as if Singular is requesting Google to produce a Cray Supercomputer. Google has deployed thousands of TPUv2 and v3 boards in its numerous data centers spread across the U.S. Thus, it would not work any great hardship or undertaking for Google to simply produce



one of each to Singular under the terms of the Protective Order entered herein. Singular should not have to go through Google's machinations in order to obtain samples of the accused TPU boards.

Further, Google previously agreed to produce the samples. This was confirmed during the Telephonic Status Conference on November 9, 2020. Counsel for Singular (Mr. Hayes) informed the Court:

We have filed infringement contentions. They have filed, I believe Friday, their non-infringement contentions, then invalidity contentions, and we worked out that they are going to provide us with a couple of samples.

*See* Gannon Dec., Ex. B at p. 4. When given the opportunity to disagree with Mr. Hayes' representation, counsel for Google declined to do so. To the contrary, Mr. Kamber responded as follows:

Good afternoon, your Honor, Matthias Kamber for Google. I think Mr. Hayes is right in terms of the general status of discovery. I think two things to clarify: . . .

*Id.* Neither clarification related to Google's agreement to provide the samples. *See id.* at 4-5.

At the end of the Conference, counsel for Google was given another opportunity to dispute or disagree with Mr. Hayes' representation. The Court asked counsel for the parties whether there was "[a]nything else anyone wants to take up?" *Id.* at p. 7. Counsel for Google responded: "No, thank you, your Honor." *Id.* Nonetheless, Google has failed to adhere to its agreement to produce the samples.

## **II. LEGAL STANDARDS**

The Federal Rules of Civil Procedure permit "discovery regarding any non-privileged matter that is relevant to any party's claim or defense" or discovery of any information that "appears reasonably calculated to lead to the discovery of admissible evidence." Fed. R. Civ. P. 26(b)(1). Because "discovery itself is designed to help define and clarify the issues," the limits



set forth in Rule 26 must be “construed broadly to encompass any matter that bears on, or that reasonably could lead to other matters that could bear on, any issue that is or may be in the case.” *Oppenheimer Fund, Inc. v. Sanders*, 437 U.S. 340, 351 (1978). Further, the Supreme Court long ago determined that the Federal Rules of Civil Procedure are to be construed liberally in favor of discovery. *Hickman v. Taylor*, 329 U.S. 495, 507 (1947); *see also SEC v. Sargent*, 229 F.3d 68, 80 (1st Cir. 2000) (quoting *Hickman*).

The party requesting discovery may move to compel the disclosure of any materials requested so long as such discovery is relevant and otherwise discoverable. *See* Fed. R. Civ. P. 37. The moving party bears the initial burden of showing that the materials and information sought are relevant to the action. *Controlled Kinematics, Inc. v. Novanta Corp.*, No. 17-cv-11029, 2019 WL 3082354, at \* 2 (D. Mass. Jul. 15, 2019). “Once a showing of relevance is made, the party opposing disclosure bears the burden of showing that the requested discovery is improper.” *Id.*

### III. ARGUMENT

To prove patent infringement, the patentee must establish that an accused device contains each limitation of the asserted claim(s). *See Cybor Corp. v. FAST Technologies, Inc.*, 138 F.3d 1448, 1467 (Fed.Cir.1998). Courts recognize *the essential nature of accused product samples* in patent infringement cases. *See P & G v. Be Well Mktg.*, No. 12-MC-392, 2013 WL 152801, at \*4 (M.D. Pa. Jan. 15, 2013) (emphasis added) (ordering production of representative samples of all accused products at defendant’s expense); *Alloc, Inc. v. Unilin Beheer B. V.*, No. 02-C-1266, 2006 WL 757871, at \*4 (E.D. Wis. Mar. 24, 2006) (granting motion to compel samples of accused products sold within relevant time period); *Everlight Elecs. Co. Ltd. v. Nichia Corp.*, No. 12-11758, 2013 WL 6713789, at \*2 (E.D. Mich. Dec. 20, 2013) (granting emergency motion



to compel defendant to produce all non-produced versions of the 1,000 or more accused products at defendant's expense).

A. LOCAL PATENT RULE 16.6(d)(4)(B)

Pursuant to the Patent Rules of this District, Google is required to automatically produce numerous documents and things to Singular. More particularly, pursuant to Local Patent Rule 16.6(d)(4)(B), Google must produce to Singular:

Sufficient samples of the accused products (or products that perform or were produced by the accused methods). When production is not practicable, the accused infringer shall permit inspection of the accused product(s) or method(s), provided that the accused infringer is only required to permit inspection of a method that continues to be practiced in the ordinary course of business.

Google cannot now *sua sponte* choose to ignore the Local Rules of this Court.

Moreover, Google cannot take the position that production of the samples would be impracticable. The TPUv2 and v3 boards are small in size; both would fit into a bankers box. Google has manufactured thousands of such devices for use in its datacenters throughout the U.S. Thus, Google obviously has the ability to easily deliver a couple of the boards to Singular. Pursuant to this Local Patent Rule 16.6(d)(B)(4), Google was automatically required to provide samples to Singular no later than 21 days after the October 2 Rule 16.6(d)(2) Conference. That deadline was October 23, 2020. Google has yet to comply with its automatic discovery obligations under Rule 16.6(d)(4)(B). Apparently, Google has no intention of (belatedly) doing so without an Order from this Court, which should be unnecessary.<sup>1</sup> Accordingly, Google

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<sup>1</sup> Perhaps Google is stalling in the hope that the Court will grant its motion to stay pending *Inter Partes* Review ("IPR"), filed on November 16, 2020. *See* Dkt. No. 91. It will be months, however, before the Patent Trial & Appeal Board decides whether or not to even grant a petition for IPR. Hence, courts in this District and elsewhere generally refuse to grant stays prior to institution of a petition for IPR. Singular will address this in detail in its opposition to the motion to stay. In the meantime, absent a stay, the show must go on.



should now be ordered to immediately produce the sample TPUv2 and v3 boards to Singular at Google's own expense. *See, e.g., P & G v. Be Well Mktg.*, 2013 WL 152801, at \*4 (ordering samples produced at defendant's expense).

B. THE TPU BOARDS ARE DIRECTLY RELEVANT TO SINGULAR'S CLAIMS AND SHOULD BE PRODUCED

In addition to the automatic production requirements, where the requested samples "are indisputably relevant to the claims and defenses in the matter," they should be produced. *See, e.g., Integra LifeSciences Corp. v. HyperBranch Med. Tech., Inc.*, No. 15-819, 2016 WL 675553, at \*1 (D. Del. Feb. 12, 2016). Accordingly, even were Google to be given and unwarranted and unauthorized special exemption to ignore the mandatory production requirements of Local Patent Rule 16.6(d)(4)(B), Google should be compelled to produce the sample boards. As set forth *supra*, the TPUv2 and v3 boards are central, and therefore relevant, to Singular's claims of infringement of each of the patents-in-suit. Thus, Singular has met its burden under Rule 37. *See, e.g., Controlled Kinematics*, 2019 WL 3082354, at \* 2.

As set forth above, courts recognize *the essential nature of accused product samples* in patent infringement cases. *See P & G v. Be Well Mktg.*, 2013 WL 152801, at \*4 (ordering production of representative samples of all accused products at defendant's expense). Thus, courts routinely grant motions to compel samples of an accused product. *See Alloc v. Unilin*, 2006 WL 757871, at \*4 (granting motion to compel samples of accused products sold within relevant time period); *Everlight v. Nichia*, 2013 WL 6713789, at \*2 (granting emergency motion to compel defendant to produce all non-produced versions of the 1,000 or more accused products at defendant's expense). *See also Quest Integ. USA, LLC v. A.Hak Indus. Servs. US, LLC*, No. C14-1971, 2016 WL 4533062, at \* 6 (W.D. Wash. Mar. 23, 2016); *Ardent Mills, LLC v. Archer-Daniels-Midland Co.*, No. 12-2171, 2015 WL 1241680, at \* 3 (D. Kan. Mar. 18, 2015); *Trading*



*Techs. Int'l, Inc. v. GL Consultants, Inc.*, No. 05 C 4120, 2013 WL 4010582, at \* 1 (N.D. Ill. Aug. 5, 2013).

Singular should not be required to continue prosecuting this case without access to the accused products that are at the heart of its infringement allegations. As in the cases cited above, Google should be ordered to produce the requested samples forthwith.

### III. CONCLUSION

For the reasons set forth above, the present motion should be granted.

Dated: November 19, 2020

Respectfully submitted,

/s/ Paul J. Hayes

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ATTORNEYS FOR THE PLAINTIFF

### CERTIFICATE OF SERVICE

I certify that on November 19, 2020, I served this document on Defendant by causing a copy to be sent via electronic mail to its counsel of record.

/s/ Paul J. Hayes